UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/738,448	12/17/2003	Amela Kreho Wilson	LCOM:016	8094

7590 01/04/2006	**EXAMINER**	
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DATE MAILED: 01/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/738,448	WILSON, AMELA KREHO
	Examiner	Art Unit
	John H. Le	2863 (AM)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>02 November 2005</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-12,14-18,20-26 and 28* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,8-10,17-18, 20 and 23-25* is/are rejected.

7)☒ Claim(s) *5-7,11,12,14-16,21,22,26 and 28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>02 November 2005</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

Response to Amendment

1.   This office action is in response to applicant's amendment received on

11/02/2005.

Claims 1, 4-6, 14, 17, 20, 22, 28 have been amended.

Claims 3, 13, 19, 27 have been cancelled.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3.   Claims 1, 4, 17, and 20 are rejected under 35 U.S.C. 102(e) as being

anticipated by Wegerich et al. (USP 6,957,172).

Regarding claim 1, Wegerich et al. teach a method for identifying signal

sources (e.g. Figs.1, 8), comprising steps of: determining phase differential data

for a signal stream, the signal stream corresponding to signal data from a single

signal source (e.g., Fig.1, Col.4, line 53-Col.5, line 16); and applying wavelet

packet processing (wavelet packet transform decomposition 102, filtering

operation) to the phase differential data to generate a wavelet-based signature

for the signal source(e.g. Col.5, lines 58-Col.66, Col.7, lines 49-63); storing in a

database wavelet-based signatures (reference library 104) corresponding to known signal sources (e.g. Col.5, lines 17-27); comparing the signature for the signal source with the stored data to determine if the signature for the signal source matches wavelet-based signatures stored for known signal source (Figs.3, 8, Col.11, line 42-Col.12, line 7, Col.14, lines 14-34).

Regarding claim 17, Wegerich et al. teach a signal source identification system (Fig.1), comprising: a phase pre-processing sub-system (102) coupled to receive an individual signal stream, the phase pre processing sub-system being configured to determine phase differential data for the individual signal stream (e.g., Fig.1, Col.4, line 53-Col.5, line 16); and a wavelet-based signal processing sub-system (106) coupled to receive the phase differential data from the phase pre-processing sub-system (102), the wavelet-based signal processing sub-system (106) being configured to apply wavelet packet processing (wavelet packet transform decomposition 102, filtering operation) to generate a signature for the individual signal source (e.g. Col.5, lines 58-Col.66, Col.7, lines 49-63), a database (reference library 104) having stored data, the stored data including wavelet-based signatures corresponding to known signal sources (e.g. Col.5, lines 17-27); and a signal source identification sub-system coupled to receive the signature from the wavelet-based signal processing sub-system (106), the signal source identification sub-system being configured to compare the signature with the stored data (104) and to determine if the individual signal source matches wavelet-based signatures of a known signal source(Figs.3, 8, Col.11, line 42-Col.12, line 7, Col.14, lines 14-34).

Regarding claims 4 and 20, Wegerich et al. teach a supplemental

identification sub-system coupled to receive data from the wavelet-based signal

processing sub-system, the supplemental identification sub-system being

configured to provide additional identification information for the individual signal

stream (e.g. Fig.8, Col.14, lines 15-24).

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described
> as set forth in section 102 of this title, if the differences between the subject matter sought to
> be patented and the prior art are such that the subject matter as a whole would have been
> obvious at the time the invention was made to a person having ordinary skill in the art to which
> said subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

Claims 2, 8-10, 18-19, 23-25 rejected under 35 U.S.C. 103(a) as being

unpatentable over Wegerich et al. (USP 6,957,172) in view of Nguyen et al. (USP

6,105,015).

Regarding claims 2 and 18, Wegerich et al. fail to teach step of acquiring

data signals including combined signal streams from a plurality of signal sources;

pre-processing the data signals to separate the data signals into a plurality

individual signal streams, each individual signal stream being deemed to have

originated from a single signal source; and using one of the individual signal

streams for the determining step.

Nguyen et al. teach step of acquiring data signals including combined

signal streams from a plurality of signal sources (e.g. Col.4, lines 17-26); pre-

processing the data signals (data preprocessing module 24) to separate the data

signals into a plurality individual signal streams (e.g. Col.4, line 66-Col.5, lines 7), each individual signal stream being deemed to have originated from a single signal source (e.g. Col.4, lines 17-26); and using one of the individual signal streams for the determining step (e.g. Col.5, lines 1-7).

Regarding claims 8 and 23, Nguyen et al. teach performing full wavelet packet decomposition into multiple levels to generate a plurality of decomposed nodes (e.g. Figs.3, 4).

Regarding claims 9 and 24, Nguyen et al. teach selecting a plurality of decomposed nodes (e.g. Figs.3, 4) and using wavelet coefficients for these selected nodes in generating the wavelet-based signature (coefficient selector 36, Col.5, lines 8-63).

Regarding claims 10 and 25, Nguyen et al. teach the multiple levels is four levels (e.g. Figs.3, 4).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include steps of acquiring data signals including combined signal streams from a plurality of signal sources; pre-processing the data signals to separate the data signals into a plurality individual signal streams as taught by Nguyen et al. in a method for identifying signal sources of Wegerich et al. for the purpose of providing a system and method for signal classification.

Allowable Subject Matter

5.   Claims 5-7, 11-12, 14-16, 21-22, 26, and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in

independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 5, none of the prior art of record teaches or suggests the combination of a method for identifying signal sources, wherein the method comprising steps of: determining phase differential data for a signal stream, the signal stream corresponding to signal data from a single signal source; and applying wavelet packet processing to the phase differential data to generate a wavelet-based signature for the signal source; storing in a database wavelet-based signatures corresponding to known signal sources; comparing the signature for the signal source with the stored data to determine if the signature for the signal source matches wavelet-based signatures stored for known signal source; acquiring data signals including combined signal streams from a plurality of signal sources; pre-processing the data signals to separate the data signals into a plurality individual signal streams, each individual signal stream being deemed to have originated from a single signal source; using one of the individual signal streams for the determining step; applying supplemental identification processing to the signal data to provide additional identification information for the signal stream, wherein supplemental identification processing comprises Fourier transform processing that generates spectral coefficients, and wherein the stored data in the database further includes spectral coefficient signatures corresponding to known signal sources. It is these limitations as they

are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Regarding claim 6, none of the prior art of record teaches or suggests the combination of a method for identifying signal sources, wherein the method comprising steps of: determining phase differential data for a signal stream, the signal stream corresponding to signal data from a single signal source; and applying wavelet packet processing to the phase differential data to generate a wavelet-based signature for the signal source; storing in a database wavelet-based signatures corresponding to known signal sources; comparing the signature for the signal source with the stored data to determine if the signature for the signal source matches wavelet-based signatures stored for known signal source; and adding signature data to the database if the signal source is not found to match signatures of known signal sources stored in the database. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Regarding claim 7, none of the prior art of record teaches or suggests the combination of a method for identifying signal sources, wherein the method comprising steps of: determining phase differential data for a signal stream, the signal stream corresponding to signal data from a single signal source; applying wavelet packet processing to the phase differential data to generate a wavelet-based signature for the signal source; storing in a database wavelet-based

signatures corresponding to known signal sources; comparing the signature for

the signal source with the stored data to determine if the signature for the signal

source matches wavelet-based signatures stored for known signal source;

acquiring data signals including combined signal streams from a plurality of

signal sources; pre-processing the data signals to separate the data signals into

a plurality individual signal streams, each individual signal stream being deemed

to have originated from a single signal source; using one of the individual signal

streams for the determining step; and resampling the data signals at a selected

sampling rate prior to the pre-processing step. It is these limitations as they are

claimed in the combination with other limitations of claim, which have not been

found, taught or suggested in the prior art of record, that make these claims

allowable over the prior art.

Regarding claim 11, none of the prior art of record teaches or suggests

the combination of a method for identifying signal sources, wherein the method

comprising steps of: determining phase differential data for a signal stream, the

signal stream corresponding to signal data from a single signal source; applying

wavelet packet processing to the phase differential data to generate a wavelet-

based signature for the signal source; storing in a database wavelet-based

signatures corresponding to known signal sources; comparing the signature for

the signal source with the stored data to determine if the signature for the signal

source matches wavelet-based signatures stored for known signal source;

wherein the applying step comprising performing full wavelet packet

decomposition into multiple levels to generate a plurality of decomposed nodes;

selecting a plurality of decomposed nodes and using wavelet coefficients for these selected nodes in generating the wavelet-based signature; wherein nodes 3, 7 and 16 are selected for use in generating the wavelet-based signature, the node numbers representing a numbering scheme where the first level nodes are numbered 1 and 2 from low to high; where the second level nodes are numbered 3, 4, 5 and 6 from low to high; where the third level nodes are numbered 7, 8, 9, 10, 11, 12, 13 and 14 from low to high; and the fourth level nodes are numbered 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29 and 30 from low to high. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Regarding claim 21, none of the prior art of record teaches or suggests the combination of a signal source identification system, comprising: a phase pre-processing sub-system coupled to receive an individual signal stream, the phase pre processing sub-system being configured to determine phase differential data for the individual signal stream; a wavelet-based signal processing sub-system coupled to receive the phase differential data from the phase pre-processing sub-system, the wavelet-based signal processing sub-system being configured to apply wavelet packet processing to generate a signature for the individual signal source; a database having stored data, the stored data including wavelet-based signatures corresponding to known signal sources; a signal source identification sub-system coupled to receive the signature from the wavelet-based signal processing sub-system, the signal

source identification sub-system being configured to compare the signature with the stored data and to determine if the individual signal source matches wavelet-based signatures of a known signal source; and a supplemental identification sub-system coupled to receive data from the wavelet-based signal processing sub-system, the supplemental identification sub-system being configured to provide additional identification information for the individual signal stream, wherein the supplemental identification sub-system comprises Fourier transform processing that generates spectral coefficients, the spectral coefficients providing additional signature information, and wherein the stored data in the database further includes spectral coefficient signatures corresponding to known signal sources. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Regarding claim 22, none of the prior art of record teaches or suggests the combination of a signal source identification system, comprising: a phase pre-processing sub-system coupled to receive an individual signal stream, the phase pre processing sub-system being configured to determine phase differential data for the individual signal stream; a wavelet-based signal processing sub-system coupled to receive the phase differential data from the phase pre-processing sub-system, the wavelet-based signal processing sub-system being configured to apply wavelet packet processing to generate a signature for the individual signal source; a database having stored data, the stored data including wavelet-based signatures corresponding to known signal

sources; a signal source identification sub-system coupled to receive the

signature from the wavelet-based signal processing sub-system, the signal

source identification sub-system being configured to compare the signature with

the stored data and to determine if the individual signal source matches wavelet-

based signatures of a known signal source wherein the signal source

identification sub-system is further configured to add signature data to the

database if the individual signal source is not found to match signatures of known

signal sources stored in the database. It is these limitations as they are claimed

in the combination with other limitations of claim, which have not been found,

taught or suggested in the prior art of record, that make these claims allowable

over the prior art.

Regarding claim 26, none of the prior art of record teaches or suggests

the combination of a signal source identification system, comprising: a phase

pre-processing sub-system coupled to receive an individual signal stream, the

phase pre processing sub-system being configured to determine phase

differential data for the individual signal stream; a wavelet-based signal

processing sub-system coupled to receive the phase differential data from the

phase pre-processing sub-system, the wavelet-based signal processing sub-

system being configured to apply wavelet packet processing to generate a

signature for the individual signal source; a database having stored data, the

stored data including wavelet-based signatures corresponding to known signal

sources; and a signal source identification sub-system coupled to receive the

signature from the wavelet-based signal processing sub-system, the signal

source identification sub-system being configured to compare the signature with the stored data and to determine if the individual signal source matches wavelet-based signatures of a known signal source; wherein the wavelet-based signal processing sub-system is configured to perform full wavelet packet decomposition into multiple levels to generate a plurality of decomposed nodes, wherein the wavelet-based signal processing sub-system is further configured to use wavelet coefficients for selected nodes in generating the waveletbased signature; wherein nodes 3, 7 and 16 are selected for use in generating the wavelet-based signature, the node numbers representing a numbering scheme where the first level nodes are numbered 1 and 2 from low to high; where the second level nodes are numbered 3, 4, 5 and 6 from low to high; where the third level nodes are numbered 7, 8, 9, 10, 11, 12, 13 and 14 from low to high; and the fourth level nodes are numbered 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29 and 30 from low to high. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Response to Arguments

6.   Applicant's arguments filed 11/02/2005 have been fully considered but they are not persuasive.

        -Applicant argues that the prior did not teach "a database having stored data, the stored data including wavelet-based signatures corresponding to known signal sources; and a signal source identification sub-system coupled to receive

the signature from the wavelet-based signal processing sub-system, the signal source identification sub-system being configured to compare the signature with the stored data and to determine if the individual signal source matches wavelet-based signatures of a known signal source" as cited in claims 1 and 17.

Examiner position is that Wegerich et al. teach a database (reference library 104) having stored data, the stored data including wavelet-based signatures corresponding to known signal sources (e.g. Col.5, lines 17-27); and a signal source identification sub-system coupled to receive the signature from the wavelet-based signal processing sub-system (106), the signal source identification sub-system being configured to compare the signature with the stored data (104) and to determine if the individual signal source matches wavelet-based signatures of a known signal source(Figs.3, 8, Col.11, line 42-Col.12, line 7, Col.14, lines 14-34).

Conclusion

7.   Specifically Wegerich et al. has been added to second ground of rejection.

Contact Information

8.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to John H. Le whose telephone number is 571 272 2275. The examiner can normally be reached on 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on 571 272 2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from

the Patent Application Information Retrieval (PAIR) system. Status information

for published applications may be obtained from either Private PAIR or Public

PAIR. Status information for unpublished applications is available through Private

PAIR only. For more information about the PAIR system, see http://pair-

direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-

free).

John H. Le

Patent Examiner-Group 2863

December 30, 2005

BRYAN BUI
PRIMARY EXAMINER